

(No Model.)

2 Sheets—Sheet 1.

U. BOHREN.
PEN OR LEAD HOLDER.

No. 387,042.

Patented July 31, 1888.

Fig. 1.

Fig. 3.

Fig. 4.

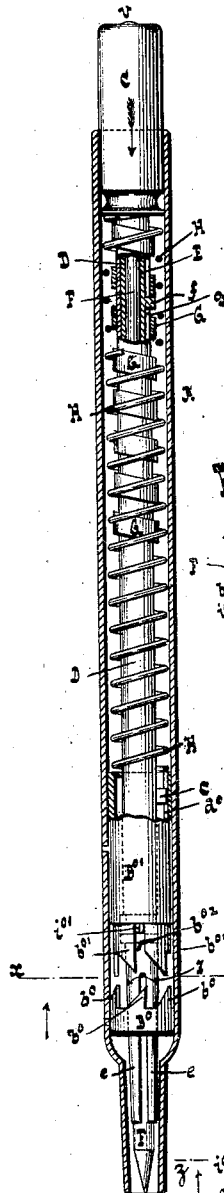


Fig. 5.

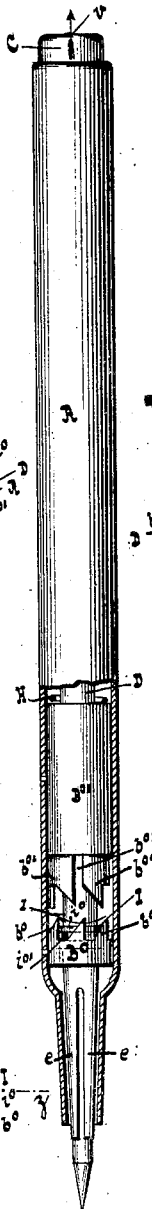
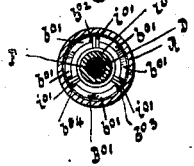


Fig. 6.

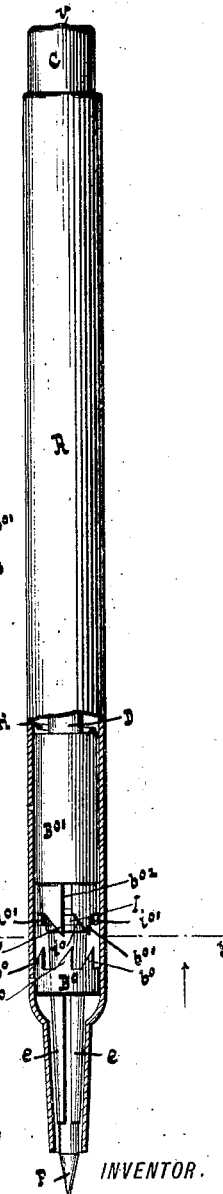
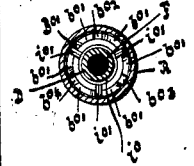
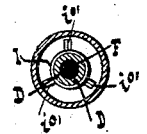


Fig. 7.



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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

U. BOHREN.
PEN OR LEAD HOLDER.

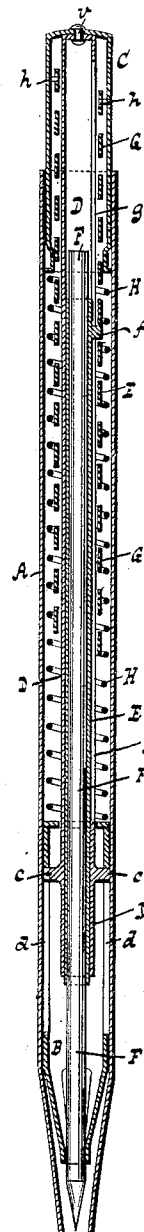
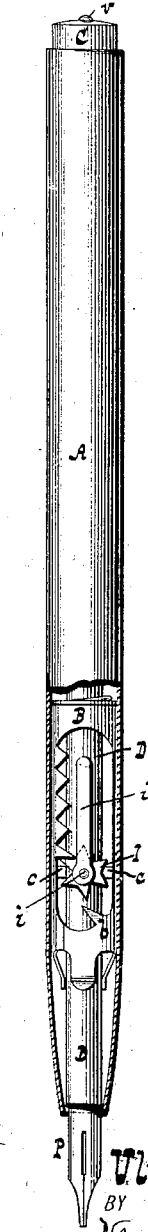
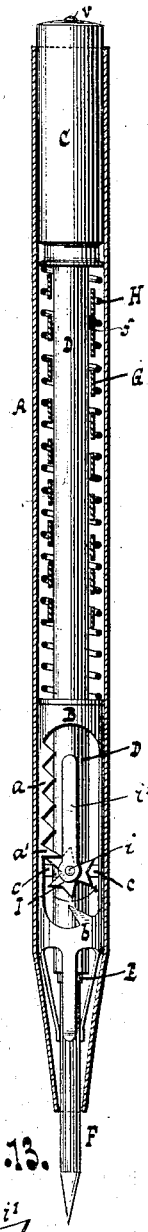
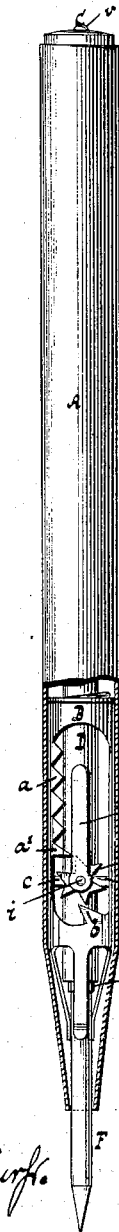
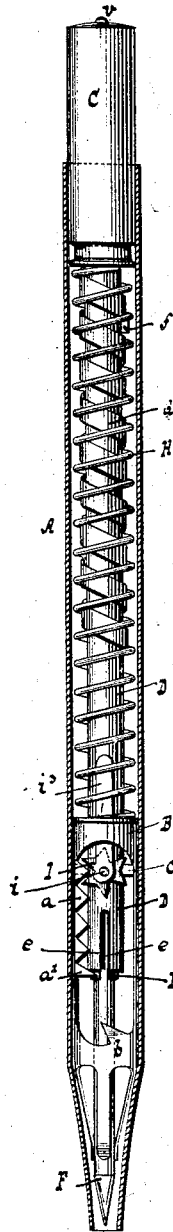
No. 387,042.

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Fig. 8.

Fig. 12.

Fig. 9. Fig. 10. Fig. 11.



WITNESSES:

Adrian du Kauf.
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UNITED STATES PATENT OFFICE.

ULRICH BOHREN, OF HOBOKEN, NEW JERSEY.

PEN OR LEAD HOLDER.

SPECIFICATION forming part of Letters Patent No. 387,042, dated July 31, 1888.

Application filed March 23, 1888. Serial No. 268,092. (No model.)

To all whom it may concern:

Be it known that I, ULRICH BOHREN, a citizen of Switzerland, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Pen or Lead Holders, of which the following is a specification.

This invention has for its object to provide a novel pen or lead holder of such construction that the pen or lead carrier is locked in both its advanced and retracted positions.

To accomplish this the invention consists in the construction of devices hereinafter described and claimed, reference being made to 15 the accompanying drawings, in which—

Figure 1 represents a sectional elevation showing the lead in its retracted position. Fig. 2 is a similar view of the lower end of the lead holder, showing the parts in the position when the head has been partially depressed. Fig. 3 is a similar view of the lead holder when the head has been completely depressed and the lead is in its forward position but not yet locked. Fig. 4 is a similar view when the head after having been completely depressed is released and the lead is locked in position for use. Fig. 5 is a transverse section in the plane $x x$, Fig. 1. Fig. 6 is a transverse section in the plane $y y$, Fig. 4. Fig. 7 is a transverse section in the plane $z z$, Fig. 2. Fig. 8 is a sectional elevation of a modification, showing the lead in its retracted position. Fig. 9 is a similar position showing the lead in its forward position before it is locked. Fig. 10 is a similar view showing the lead locked in position for use. Fig. 11 is a similar view showing a pen in place of the lead. Fig. 12 is a longitudinal section showing the feed movement for the lead. Fig. 13 is a detached view of the latch used in this modification.

Similar letters indicate corresponding parts.

The object of this invention is a pen or lead holder so constructed that when the head of the holder is pressed in and released the pen or lead is brought out and locked in position for use, and when the head is pressed in again and released the pen or lead is retracted.

In the example shown in Figs. 1 to 7 of the drawings the letter A designates a tubular

casing open at both ends, the lower end being made tapering. In the interior of the lower part of this casing are firmly secured two tubes, $B^0 B''$, at a slight distance from each other, the tube B^0 being provided at its upper edge with a series of teeth, b^0 , while the tube B'' is provided at its lower edge with a similar number of teeth, b'' . In the example shown in the drawings each of the tubes has six teeth, but this number can be changed. In the tube B'' are also three slots, $b''^1 b''^2 b''^3$, disposed in such a manner that between the slots b''^1 and b''^2 are two teeth, b''^4 , between the slots b''^2 and b''^3 two teeth, b''^5 , and between the slots b''^3 and b''^4 two teeth, b''^6 . (See Figs. 5 and 6.) By referring to Figs. 1, 3, and 4 it will be seen that the slots $b''^1 b''^2 b''^3$ are nearly opposite the points of the teeth b^0 on the tube B^0 , while the points of the teeth b'' on the tube B'' are opposite to the inclined faces of the teeth b^0 on the tube B^0 .

Into the upper end of the casing A is fitted the hollow head C, from which extends a tube, D, down through the tubes $B^0 B''$. From this tube extends a lug, c , which engages with a longitudinal groove, d'' , formed in the tube B'' . (See Fig. 1.) In the interior of the tube D is situated the sheath E, Figs. 1 and 12, which contains the lead F, the lower end of the tube D being split so as to form spring-jaws $e e$, which grasp the lead F with an elastic pressure. From the lead-sheath projects a toe, f , which extends through a slot, g , in the tube D, Figs. 1 and 12, and engages a flat spiral, G, which is secured to the head C by any suitable means—such as pins $h h$, Fig. 12. The tube D is secured to the head C, so that the latter can turn freely in either direction independent of the tube, while both are compelled to move together in the direction of their length. For this purpose a pin, v , may be employed, as shown in Fig. 12.

Between the upper end of the tube B'' and the inner end of the head C is placed a spiral spring, H, which is wound in a direction opposite to that of the spiral G, and which has a tendency to throw said head up to the position shown in Figs. 1, 8, and 12, and if the head is moved up into this position the lead sheath E is compelled to follow by the engagement of the toe f with the flat spiral G. If

the head C is turned round, the tube D remains stationary, while the lead-sheath E is moved in or out by the action of the flat spiral G upon the toe *f*.

5 On the tube D is secured the revolving latch I. In the example shown in Figs. 1 to 7, inclusive, this latch consists of a ring which is situated between two collars, $i^0 i^0$, fastened on the tube D, so that it can freely revolve, but
10 is prevented from moving in the direction of the axis of the tube D. This ring is provided with one or more teeth, i^0 , and in the example illustrated by the drawings I have shown three such teeth to correspond in number and
15 position to the three slots $b^0 b^0 b^0$ in the tube B'. When the head C is in the position shown in Fig. 1, the lead is retracted and the teeth of the latch I abut against the upper ends of the slots $b^0 b^0 b^0$, so that they prevent the head C from following the action of
20 the spring H beyond the position shown in Fig. 1. If the head C is pressed inward, the teeth of the latch I meet the inclined faces of the teeth b^0 of the tube B', (see Fig. 2.) and
25 by the time the head C has been pressed inward to the position shown in Fig. 3 the teeth of the latch have moved down over said inclined faces of the teeth b^0 , the latch I is slightly turned round its axis in the direction
30 of arrow 1, and its teeth strike the bottom of the teeth b^0 , thereby preventing the head C from being depressed beyond this position. If the head C is now released, the latch I is carried up with the tube D and the teeth of
35 said latch strike the inclined faces of the teeth b^0 of the tube B', and as they slide up on these faces the latch is again slightly turned in the direction of arrow 1, and the head C is finally arrested in the position shown in Fig.
40 4, leaving the lead exposed for use. When the head C is again depressed, the teeth of the latch I strike the inclined faces of the teeth b^0 of the tube B and the latch is again slightly turned in the direction of arrow 1, so
45 that when the head C is released its teeth meet the inclined faces of the teeth b^0 and are conducted into the slots $b^0 b^0 b^0$, so that the head C is carried back to the position shown in Fig. 1, bringing the lead into its retracted po-
50 sition.

In the example shown in Figs. 8 to 12 of the drawings, the letter A designates a tubular casing open at both ends, the lower end being made tapering. In the interior of this
55 casing, near its lower end, is firmly secured a cage, B, on one side of which is formed a toothed rack, a , while from its opposite side projects a dog, b .

Into the upper end of the casing A is fitted
60 the hollow head C, from which extends a tube, D, down through the top of the cage B and into said cage, as seen in Fig. 12. From opposite sides of the tube D extend two arms, $c c$, which engage with longitudinal slots $d d$, formed
65 in the cage. In the interior of the tube D is situated the sheath E, which contains the lead,

F, the lower end of the tube D being split, so as to form spring-jaws $e e$, Fig. 1, which grasp the lead, F, with an elastic pressure. From the lead sheath E projects a toe, *f*, which extends through a slot, *g*, in the tube D, Fig. 12, and engages a flat spiral, G, which is secured to the head C by any suitable means—such as pins $h h$. The tube D is secured to the head C, so that the latter can turn freely in either direction independent of the tube, while both
75 are compelled to move together in the direction of their length. For this purpose a pin, *v*, may be employed, as shown in Fig. 12.

Between the upper end of the cage B and
80 the inner end of the head C is placed a spiral spring, H, which is wound in a direction opposite to that of the spiral G, and which has a tendency to throw said head up to the position shown in Figs. 8 and 12. In this position
85 the head is arrested by the arms $c c$ coming in contact with the upper ends of the slots $d d$, Fig. 12, while the lead-sheath E is compelled to follow the movements of the head by the engagement of the toe *f* with the flat spiral G.
90 If the head C is turned round, the tube D remains stationary while the lead-sheath E is moved in or out by the action of the flat spiral G upon the toe *f*.

On the tube D is firmly secured a pin, i ,
95 which forms the axis for revolving latch I. In the example shown in Figs. 8 to 11, inclusive, this latch is made in the form of a star-wheel, which has six teeth and six recesses, which are of unequal depths, the deep recesses
100 $i^1 i^1 i^1$ alternating with the shallow recesses $i^2 i^2$, Fig. 13.

The latch is exposed to the action of a spring-arm, i^3 , which presses upon it so as to produce sufficient friction to prevent it from changing
105 its position accidentally, and it (the latch) engages the rack a in the cage B, and if the head C is in its highest position, Fig. 8, the upper tooth of this rack engages one of the deep recesses i^1 of the latch I. If the head C is de-
110 pressed to the position shown in Fig. 9, the axis i of the latch is carried below the last tooth a' of the rack a , and if the head is depressed a little more one of the teeth strikes the dog b of the cage, and the latch is turned
115 to the position shown in Fig. 9. If the head C is now permitted to follow the action of the spring H, the tube D moves up and one of the shallow recesses i^2 of the latch engages the tooth a' of the rack a . This tooth is a little
120 longer than the remaining teeth of the rack, so that if the same engages one of the shallow recesses i^2 of the latch, (see Fig. 11,) it forms a stop, whereby the latch is locked and the lead is retained in the position shown in Fig.
125 11, so that it can be used for writing. If the head C is again depressed, the latch I strikes the dog b , so that it turns in the direction of the arrow marked thereon in Fig. 10, and when the head is released one of the deep recesses
130 i^1 of the latch engages the long tooth a' of the rack a , so that the latch can turn and the head

C, together with the tube D and the lead contained therein, are carried up by the action of the spring H to the position shown in Fig. 1.

From this description it will be seen that by pressing the head C clear down and then releasing it the lead is locked in the position shown in Fig. 10, and if then the head is again depressed and released the lead is carried back into the casing. By referring to Fig. 11 it will be seen that the pen P is inserted directly into the lower end of the tube D, and by first depressing the head C and then releasing it the pen is locked in the position shown in Fig. 11, ready for use, and if then the head is again depressed and released the pen is carried back into the casing A.

In order to be able to feed the lead forward as its point wears off I insert the same into the sheath E, which slides in the tube D, and which is moved in or out by turning the head C, as already explained.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with casing A, the spring-supported head C, fitted into said casing, and the tube D, carrying a pen or lead, of a latch, I, actuated by the head C and constructed to lock the tube D in its forward and also in its retracted position, substantially as described, whereby the latch is thrown in its locking position by first depressing and then releasing the head C, and in its unlocking position allowing the tube D to recede by depressing and releasing the head a second time, as set forth.

2. The combination, in a pen or lead holder, of the tubular casing provided interiorly with upper and lower teeth, the spring supported head, the pen or lead holding tube, and the latch mounted on the said tube and having a series of teeth and locked in a stationary position to hold the tube advanced by depressing and then releasing the head, and unlocked to permit the tube to recede by again depressing and then releasing said head, substantially as described.

3. The combination, in a pen or lead holder, of the casing A, having the lower fixed tube B^o, provided with teeth b^o, the upper tube B^{o'}, provided with teeth b^{o'}, and slots b^{o2} b^{o3} b^{o4}, the spring supported head C, the pen or lead holding tube D, and the revolving toothed latch I, mounted on said holding tube and revolved by the teeth, substantially as and for the purposes described.

4. The combination of the casing A, the non-rotating pen or lead holding tube D, the spring-supported head C, loosely connected with the tube, the spiral G, connected with the head, the sheath E, arranged in the holding tube and having a toe, f, projecting through the latter and engaging the spiral, a rotating toothed latch, I, mounted on the lead-holding tube, and upper and lower teeth in the casing for turning the latch, substantially as described.

5. The combination, with the casing A and the spring-supported head C, of the tube D, the spiral G, carried by the head and made to embrace the tube D, the lead-sheath E, fitted into the tube D, and the toe f, made to project from the sheath E through a slot in the tube D and engaging the spiral G, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

ULRICH BOHREN. [L. s.]

Witnesses:

W. C. HAUFF,

E. F. KASTENHUBER.